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FILE

Joint Engineering Exhibit

AREAS and POPULATIONS SERVED

prepared for

MM Docket No. 92-114

Ch. 258A Jupiter, Florida

August 12, 1992

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ENGINEERING STATEMENT

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The Engineering Exhibit of which this Statement is part details the areas and populations served by WTRU and Jupiter Broadcasting Corporation (Jupiter), the incumbent and challenging applicant for for FM broadcast channel 258 at Jupiter, Florida. This Exhibit was sponsored by those two applicants. Other aural services available to the coverage areas of these two proposals are also described.

Summary

The overall areas and populations proposed to be served by these applicants vary somewhat, as detailed by Table II. Both prospective service areas presently have five or more authorized primary aural services during daytime and nighttime hours. There are no underserved areas within the uncommon proposed coverage areas.

Proposed Services Methodology

Each proponent's attorney provided a copy of the latest engineering amendment or original engineering of the Application for Construction Permit.

Antenna site geographic coordinates and antenna height above mean sea level data were extracted from each application. The effective antenna height (EAH) for each of the eight cardinal radials for each proposal was computed using an independent determination of average terrain elevations using the N.G.D.C. TPG-0050 30-second topographic data base. These data were checked against the antenna height data provided in each application for construction permit.

Distances to the 1.0 millivolt per meter (mV/m) coverage contour for each proposal were computed along the eight cardinal radial bearings and one principal community direction, if the latter was specified. Antenna height data determined independently from the N.G.D.C. TPG-0050 30 second topographic database were used for all radials. For radials where the 3 to 16 kilometer segment extended over the Atlantic Ocean, the portion of the radial employed in the HAAT computation was truncated at the land edge. Few, if any, differences[1] were found between the independent and applicants' radial HAAT data. Since the same terrain program, 30 second database and method was used for each proposal in this report, an "apples to apples" comparison has been made. Contour distances were determined using this firm's proprietary computer programs which extract terrain data and simulate the F(50,50) propagation curve of §73.333, Figure 1, of the Commission's Rules. Tables I A-B set forth the pertinent EAH data and contour distances for each proposal.

Distances to the 1.0 mV/m contour along the eight standard bearings and, where specified, one principal community radial azimuth were input to a computer algorithm[2] which interpolates distances to contours for one degree intervals of azimuth, i.e., 360 distances per proposal. This data was used, in turn, to drive a digital plotter which generated the coverage contours shown. Figure 1 illustrates the coverage contours for the applications of the proponents.

/1 Most such differences were less than two meters.

/2 The specific method used is based on Algorithm 433 of the Association for Computing Machinery; *see* **Communications of the ACM**; Volume 15, Number 10; October, 1972

The total land area served by the 1.0 mV/m contour of each proposal was found by measurement of the land area by compensating polar planimeter. The results were rounded in accordance with the inherent accuracy limitations of the underlying methods.

The total population served by each proponent was determined using a computer program which sums the populations of all 1990 Census enumeration block groups whose centroids are contained within the 1.0 mV/m coverage contour. These tracts are small in population, typically several dozen to several hundred people. This method has considerably better resolution than the traditional approach of assuming uniform population distribution within each Census minor civil division (MCD). Consequently, its accuracy for the purpose of determining overall population is believed to be better than the traditional method.

The methods used in performing this study were chosen and developed to provide the most neutral, repeatable analysis possible. All proposals are subjected to the same inaccuracies without the variability of manual curve reading, distance to contour plotting, contour sketching, and estimate of percent of area covered. The results are considered to be as neutral as the state of the art permits.

Overall Service Proposed

Table II sets forth the overall land areas and populations to be covered by each proponent. The Jupiter proposal covers 3% less area, but 3% more population than does the licensed WTRU facility. Jupiter covers 1010 square kilometers, while WTRU covers 1043 square kilometers. WTRU serves population of 203,619 persons, while Jupiter will serve 209,531 persons.

Existing Services Methodology

Other available services were studied to determine those areas, if any, proposed to be served which now receive fewer than five existing aural services. The Commission's engineering database was used, in conjunction with NGDC 30 second terrain data, to obtain information[3] pertinent to the determination of coverage contour location for each relevant station. Where stations had both licensed and authorized (construction permit) facilities, the facilities authorized in the construction permit were employed. Non-commercial educational stations were not included.

For AM stations, FCC Figure M-3 ground conductivity and standard radiation pattern data were assumed in finding distances to pertinent contours. Contour distances were determined using a computer program which simulates the Commission's AM propagation curves, using the equivalent distance method for paths of non-uniform conductivity.

Since it has been determined that the uncommon proposed coverage areas are well served, neither a plot of the existing station contours nor a tabulation of the detailed data used for determining the locations of those contours has been included. That data will be provided upon request.

Existing Services Results

Five or more aural services are available at all times throughout the composite proposed service area. These services are listed or referenced in Table III.

Conclusion

The areas and populations served by the two proponents in MM Docket No. 92-114 have been evaluated in accordance with relevant FCC policies and rules. The data set forth

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/3 FM station geographic coordinates and antenna elevation AMSL values

herein was developed using neutral methods which are designed to minimize random errors.

Qualifications and Certification

The undersigned is a consulting engineer whose qualifications, a matter of record before the Federal Communications Commission, include over twelve years of technical experience in the broadcast and communications industry; five years in private practice preparing engineering studies for submission to the Commission; registration as a Professional Engineer in Electrical Engineering in the Commonwealth of Virginia and the District of Columbia; and membership in the Association of Federal Communications Consulting Engineers. I hereby certify, under penalty of perjury, that I have prepared the foregoing statement, that it is true and correct of my own knowledge, except where stated to be on information or belief and, as to the facts so stated, I verily believe them to be true.

August 12, 1992

Respectfully Submitted,

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PROPOSED CONTOUR DATA

Table I-A

WTRU

Facilities:	Site Coordinates:
ERP: 3.0 kilowatts	26° 56' 22" N
HAAT: 91 meters	80° 07' 04" W

Azimuth (degrees)	Effective Antenna Height (meters)	1.0 mV/m Contour Distance (kilometers)
0.0	95.0	23.6
45.0	95.7	23.7
90.0	96.0	23.8
135.0	95.4	23.7
180.0	90.7	23.1
225.0	90.5	23.1
270.0	91.9	23.3
315.0	96.0	23.8

Land Area Within 1.0 mV/m Contour:
1,043 Square kilometers

Table I-B

Jupiter Broadcasting Company

Facilities:	Site Coordinates:
ERP: 3.0 kilowatts	26° 56' 40" N
HAAT: 100 meters	80° 05' 30" W

Azimuth (degrees)	Effective Antenna Height (meters)	1.0 mV/m Contour Distance (kilometers)
0.0	99.0	24.1
45.0	103.0	24.6
90.0	103.0	24.6
135.0	103.0	24.6
180.0	99.3	24.2
225.0	98.4	24.1
270.0	100.6	24.3
315.0	103.0	24.6

Land Area Within 1.0 mV/m Contour:
1,010 square kilometers

Note: Overall HAAT from applications. Radial EAH values obtained from antenna elevation AMSL and NGDC 30 second terrain data.

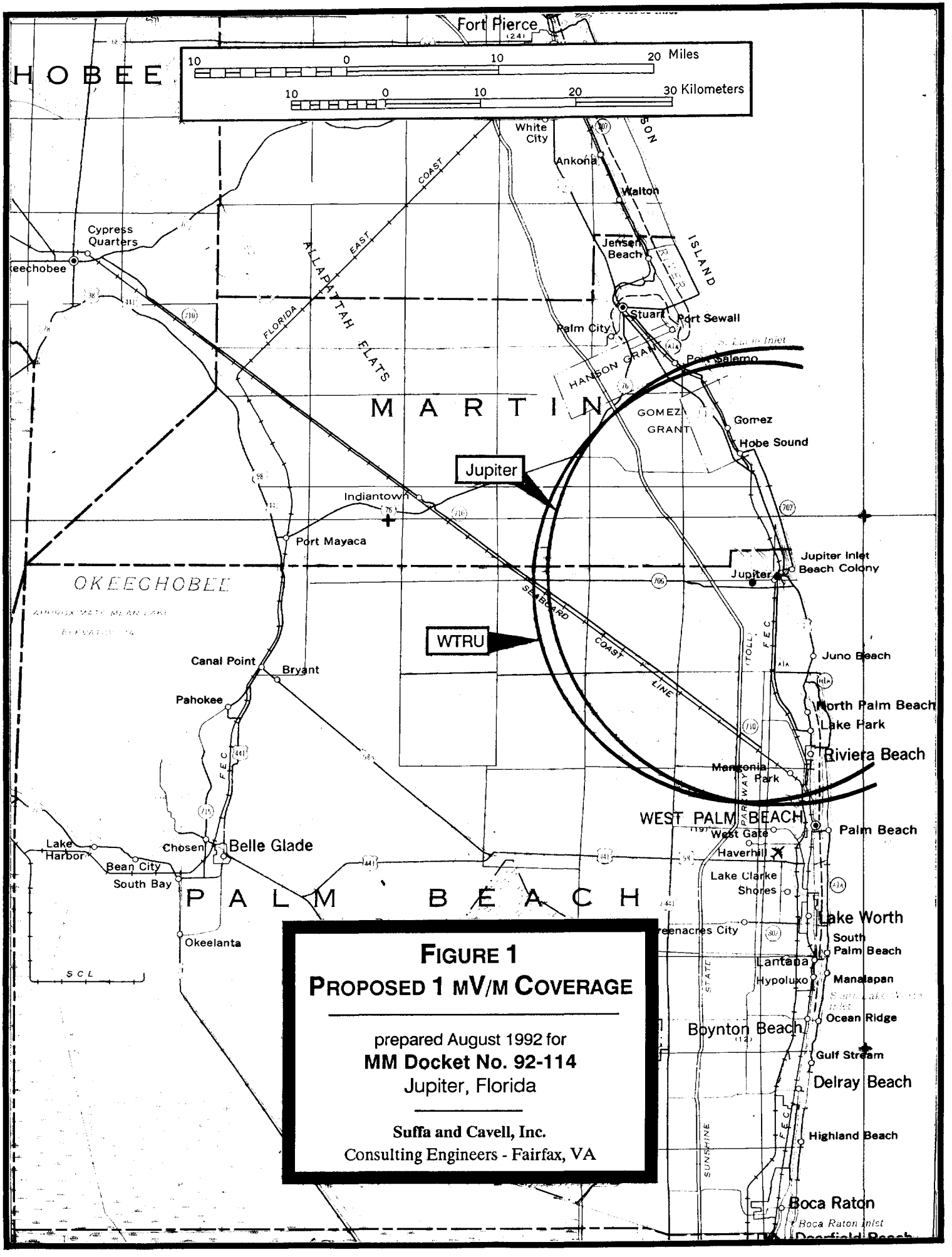

FIGURE 1
PROPOSED 1 mV/m COVERAGE

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Suffa and Cavell, Inc.
Consulting Engineers - Fairfax, VA

Table II

TOTAL AREAS AND POPULATIONS SERVED

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Applicant	Land Area (sq. km.)	Population (1980 Census)
WTRU	1,043	203,619
Jupiter	1,010	209,531

Table III

AVAILABLE AURAL SERVICES

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Ch. 271A Jupiter, FL

Station	Location	Frequency	Facilities	Site Coordinates
WAYF-CP	West Palm Beach, FL	201C2	50 kW 127 m	26° 47' 59" N 80° 04' 33" W
WOVV	Fort Pierce, FL	238C1	100 kW 299 m	27° 07' 20" N 80° 23' 21" W
WRMF	West Palm Beach, FL	250C	100 kW 411 m	26° 34' 37" N 80° 14' 32" W
WKGR	Fort Pierce, FL	254C	100 kW 421 m	27° 07' 20" N 80° 23' 21" W
WEAT	West Palm Beach, FL	282C1	56 kW 381 m	26° 34' 37" N 80° 14' 32" W
WIRK(CP)	West Palm Beach, FL	300C1	100 kW 163 m	26° 46' 00" N 80° 08' 22" W

Note: Additional services are available to portions of the proposed coverage areas during daytime and nighttime hours.